

REMARKS

Claims 1, 5, 7, 8, 11, 12, 15, 16, 19, 21-23, 25-42, 44-46, 48, 50, 53-55, 59 and 60 are in this application and are presented for consideration. By this Amendment, Applicant has amended claims 1, 5, 7, 8, 11, 12, 15, 16, 19, 21-23, 25-42, 44-46, 48, 50 and 53-55. Claims 2 and 24 have been canceled. Applicant has also added new claims 59 and 60.

Claims 5, 7, 10, 12 and 22 have been rejected for minor informalities.

Applicant has amended claims 5, 7, 12 and 22 such that the claims no longer depend upon canceled claims. Applicant would like to note that claim 10 was canceled in the preliminary amendment filed June 19, 2006.

Claims 1-3, 7, 8, 10, 12, 15, 16, 19, 21-42, 44-46, 48, 50 and 53-55 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Fadaie (U.S. 5,328,319).

The present invention relates to a method and a device for handling substantially rod-shaped objects, particularly poles of articles individually stacked in one another, during a loading process. The objects are provided in a first geometrical arrangement via a manufacturing or processing machine. A gripping device grips a portion of each object arranged in the first geometrical arrangement and moves the objects to form a modified geometrical arrangement. The objects are loaded into the loading aid such that the objects remain in the modified arrangement. The first geometrical arrangement of the objects has a first packaging density and the modified arrangement of the object has a packaging density that is greater than the first packaging density. The modification of the geometrical arrangement of the objects advantageously decreases the lateral spacing between the objects so that as many

objects can be placed within the loading aid as possible. This reduces the number of loading aids needed to pack the objects. This advantageously leads to optimal packing of the loading aid and higher packaging efficiency. The prior art as a whole fails to disclose such features and such packing optimization advantages.

Fadaie discloses a mixing station at which is located a robot 10. The robot 10 includes a robotic arm 12 having an article engaging means 14 attached thereto. Four conveyors 16, 18, 20 and 22 receive containers in the form of cartons or boxes 24 filled with plastic cups from pallets. The boxes 24 are discharged onto an intermediate conveyor 26. Intermediate conveyor 26 transports containers 24 to a flap opening station 28 at which the flaps are opened and routed to a feed conveyor 30 which moves the opened boxes to the mixing station at robot 10. When arriving at the mixing station the boxes are fully opened at the tops thereof to disclose the stacks of cups 32 within the interiors of the containers. Retention bars 36 are provided at the mixing station to prevent the flaps of the containers from closing. An article engaging means 24 is positioned by the robot over two adjacent boxes 24 located at the mixing station. A robotic arm 12 lowers the article engaging means 24 so that the follower heads 56 of the follower elements 52 engage and enter into the top most cups of the stacks disposed thereunder. Clamping elements 50 engage the cups and settle between adjacent cups. The engaged stack of cups are removed from their respective containers by raising the article engaging means 14 so that the bottoms of the stacks of cups clear the tops of the containers. The robot and the article engaging means cooperate to transport the removed stacks of cups to containers differing from the containers from which they were removed so that a desired mix

of colors within any given container can be obtained.

Fadaie fails to teach and fails to suggest the combination of gripping objects in a first geometrical arrangement and moving the objects after the objects have been gripped in the first geometrical to form a modified geometrical arrangement of the objects. According to the invention, the packaging density of the modified geometrical arrangement of the objects is greater than the packaging density of the first geometrical arrangement of the objects. Fadaie merely discloses an article engaging means that cooperates with a robot to vary the mix of articles in a container by engaging a plurality of articles and transferring the articles from a first location to a second location. However, Fadaie fails to provide any suggestion that the article engaging means changes the lateral spacing of the articles or the packaging density as claimed. In contrast to Fadaie, the present invention modifies the geometrical arrangement of the objects to change the packaging density of the objects by moving the objects after the objects have been gripped. This advantageously decreases the lateral spacing defined by one object and another object. This advantageously increases packaging efficiency since more objects can be placed within a loading aid. This significantly reduces the amount of loading aids necessary to package the objects. Compared with the present invention, Fadaie only teaches mixing or exchanging articles to vary the mix of articles in the containers, but is void of any suggestion of altering a geometrical arrangement of the articles to form a modified arrangement of the articles by moving the articles. As such, Fadaie does not teach and does not suggest each feature of the claimed combination. Accordingly, Applicant respectfully requests that the Examiner favorably consider claims 1 and 23 as now presented and all claims that respectively depend thereon.

Applicant has added new claims 59 and 60. New independent claim 59 highlights that a magazine means receives the objects in a first arrangement from the processing machine and modifies the arrangement of the objects such that the packaging density of the objects is increased. New dependent claim 60 is based on claim 19 and further clarifies that the handling device is a multiaxial industrial robot. Applicant respectfully requests that the Examiner favorably consider new claims 59 and 60 as presented.

Favorable action on the merits is requested.

Respectfully submitted
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